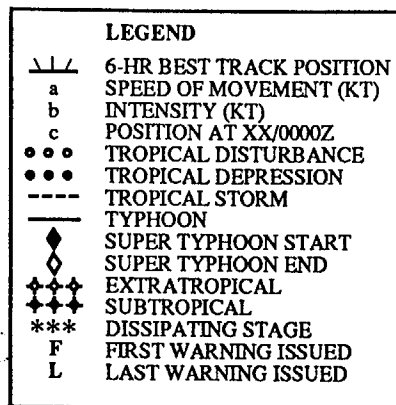


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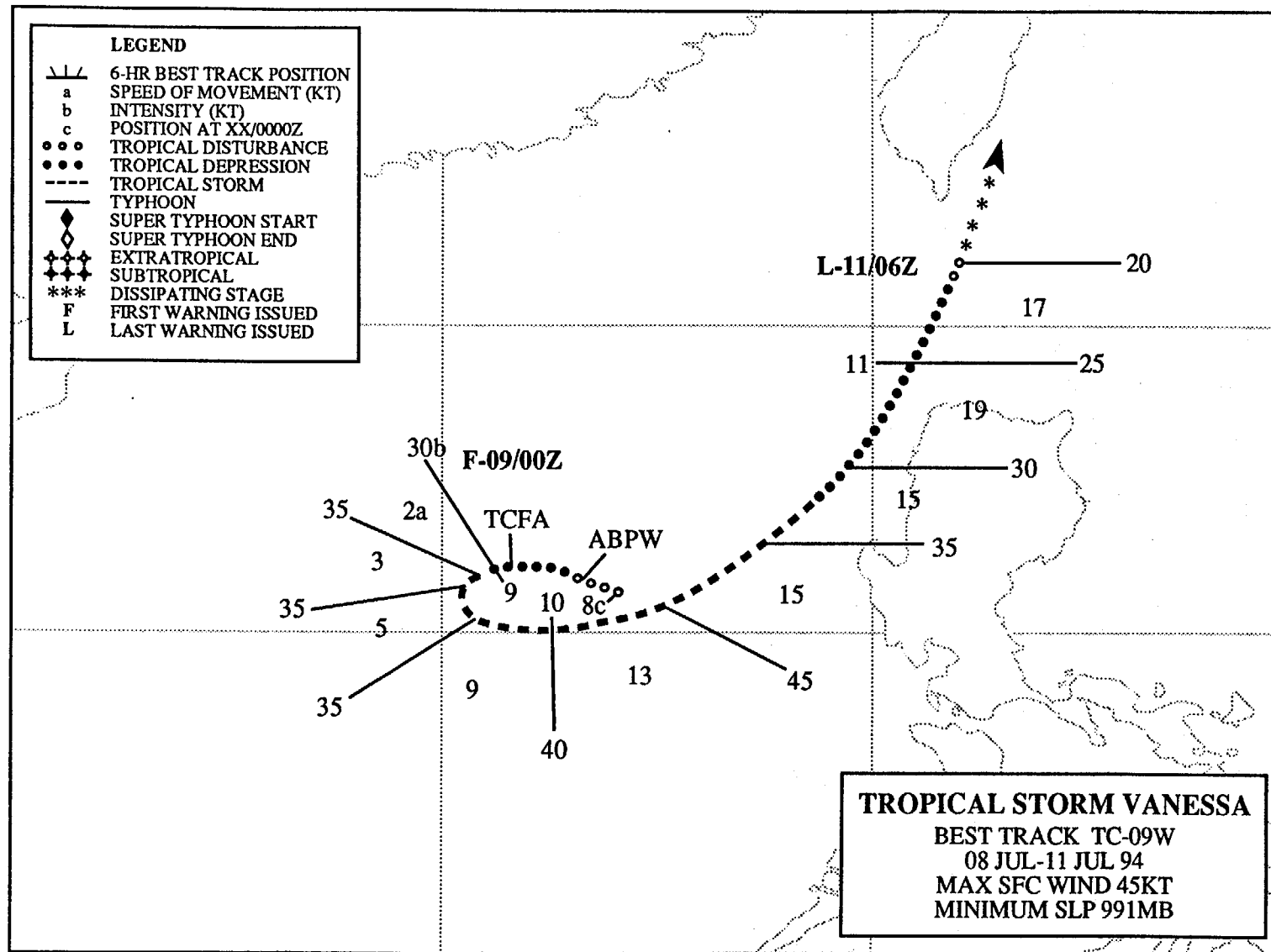


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TROPICAL STORM VANESSA (09W)

I. HIGHLIGHTS

The second of five tropical cyclones to form in the South China Sea during 1994, Vanessa was small. Interacting with the larger Typhoon Tim (08W), Vanessa moved northeastward, closing to within about 400 nm (740 km) of Tim. Vanessa's convection then was sheared away and its low-level circulation center was absorbed by Tim's outer circulation.

II. TRACK AND INTENSITY

During the first week of July, the monsoon trough extended across the South China Sea at about 15°N, and from there, east-southeastward into Micronesia. A few days prior to the formation of Vanessa in the South China Sea, larger-sized Typhoon Tim (08W) formed in the Philippine Sea and moved west-northwestward towards Taiwan. As Tim matured in the Philippine Sea, a tropical disturbance in the South China Sea, located just west of Luzon, began to show signs of development. Synoptic data and satellite imagery showed that a low-level circulation center had persisted for 24 hours, and this tropical disturbance was mentioned on the 080600Z July Significant Tropical Weather Advisory. Satellite imagery on the morning of 09 July showed that this system had become well organized (Figure 3-09-1). A Tropical Cyclone Formation Alert was issued at 082200Z followed by the first warning at 090000Z. After an initial period of slow westward motion, Vanessa executed a counter-clockwise loop, and then tracked northeastward under the steering influence of Tim's larger circulation and deep southwesterly monsoon flow.

Vanessa reached a peak intensity of only 45 kt (23 m/sec), possibly due to vertical and horizontal shearing imposed on it by the larger Typhoon Tim (08W) (Figure 3-09-2), before it was destroyed in a merger with Tim. The final warning was issued at 110600Z when satellite imagery and synoptic data indicated that Vanessa's circulation had disappeared into Tim's southeastern quadrant.

III. DISCUSSION

Asymmetrical tropical cyclone merger — wherein one tropical cyclone loses its deep convection and its remnant low-level circulation is swept into the remaining intact tropical cyclone — is the norm for a binary interaction that ends in merger (Lander and Holland 1993). Vanessa's binary interaction with Typhoon Tim (Figure 3-09-3) was a typical case of the merger of two tropical cyclones. In contrast, the first-ever observed case of symmetrical dissolution of deep convection and merger of two tropical cyclones occurred later in the year when Pat (29W) and Ruth (30W) merged (see their summaries later in this chapter).

IV. IMPACT

Tropical Storm Vanessa battered the northern Philippines with strong winds and heavy rains. Torrential rains triggered landslides along major highways and explosions of superheated material on the slopes of Mount Pinatubo. One person was killed and three injured by flying debris from the Pinatubo explosions. In northern Luzon, a man was killed when the roof of his house collapsed.

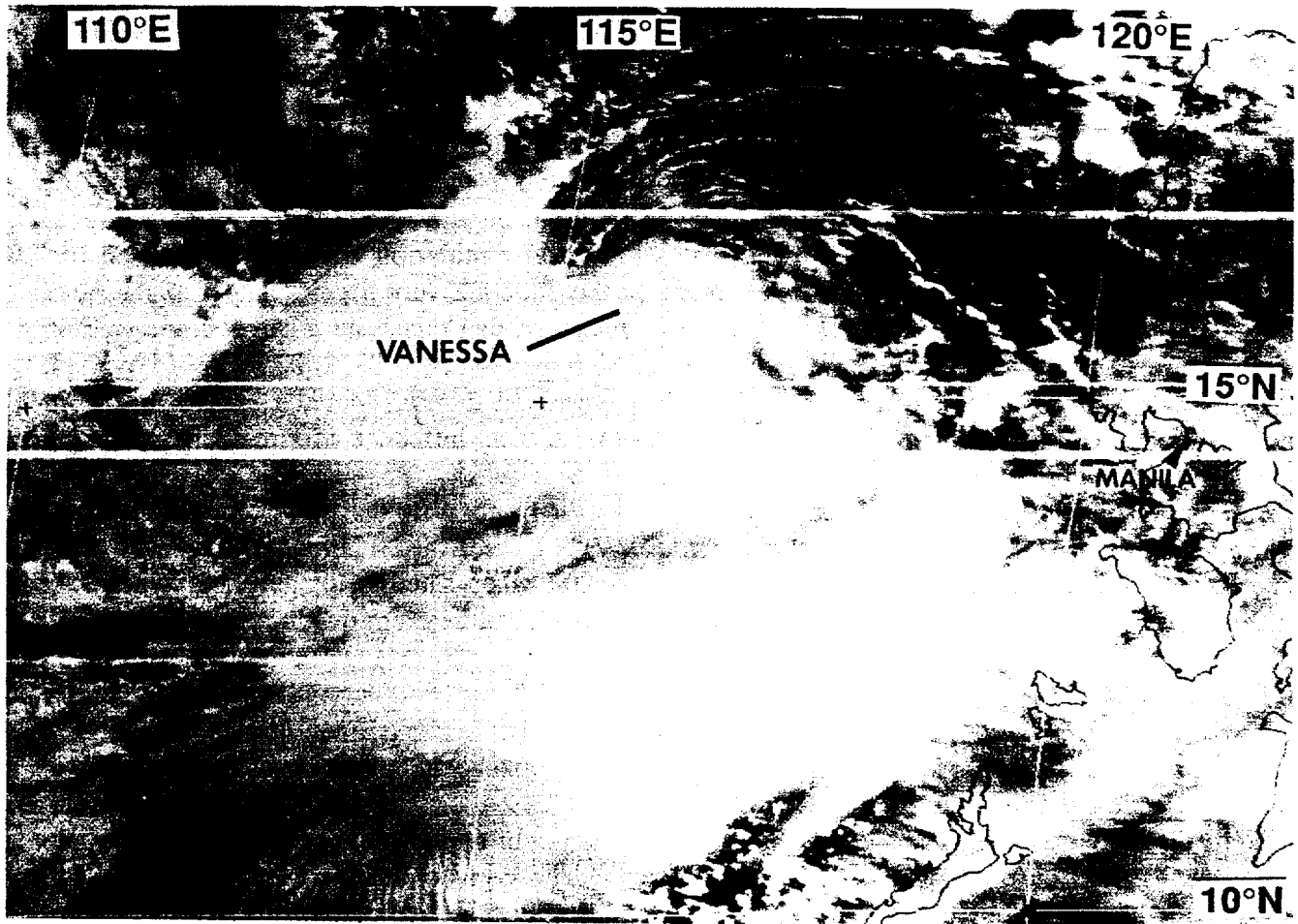


Figure 3-09-1 Well-organized low-level cloud lines and a central dense overcast prompted the first warning on Tropical Storm Vanessa (082331Z July visible GMS imagery).

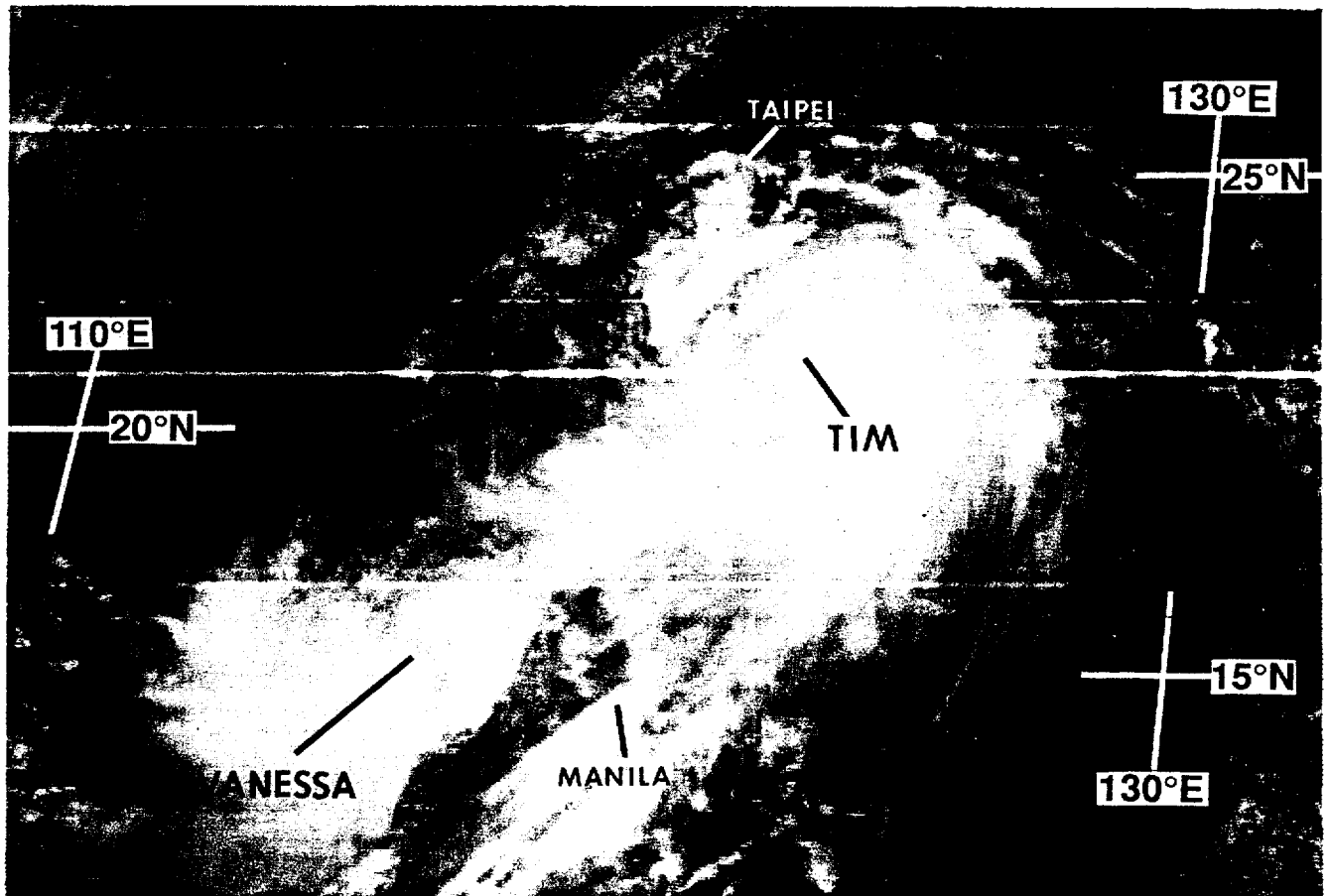


Figure 3-09-2 Vanessa is moving northeastward under the influence of the outer circulation of Typhoon Tim (08W) and strong southwesterly monsoonal flow (100131Z July visible GMS imagery).

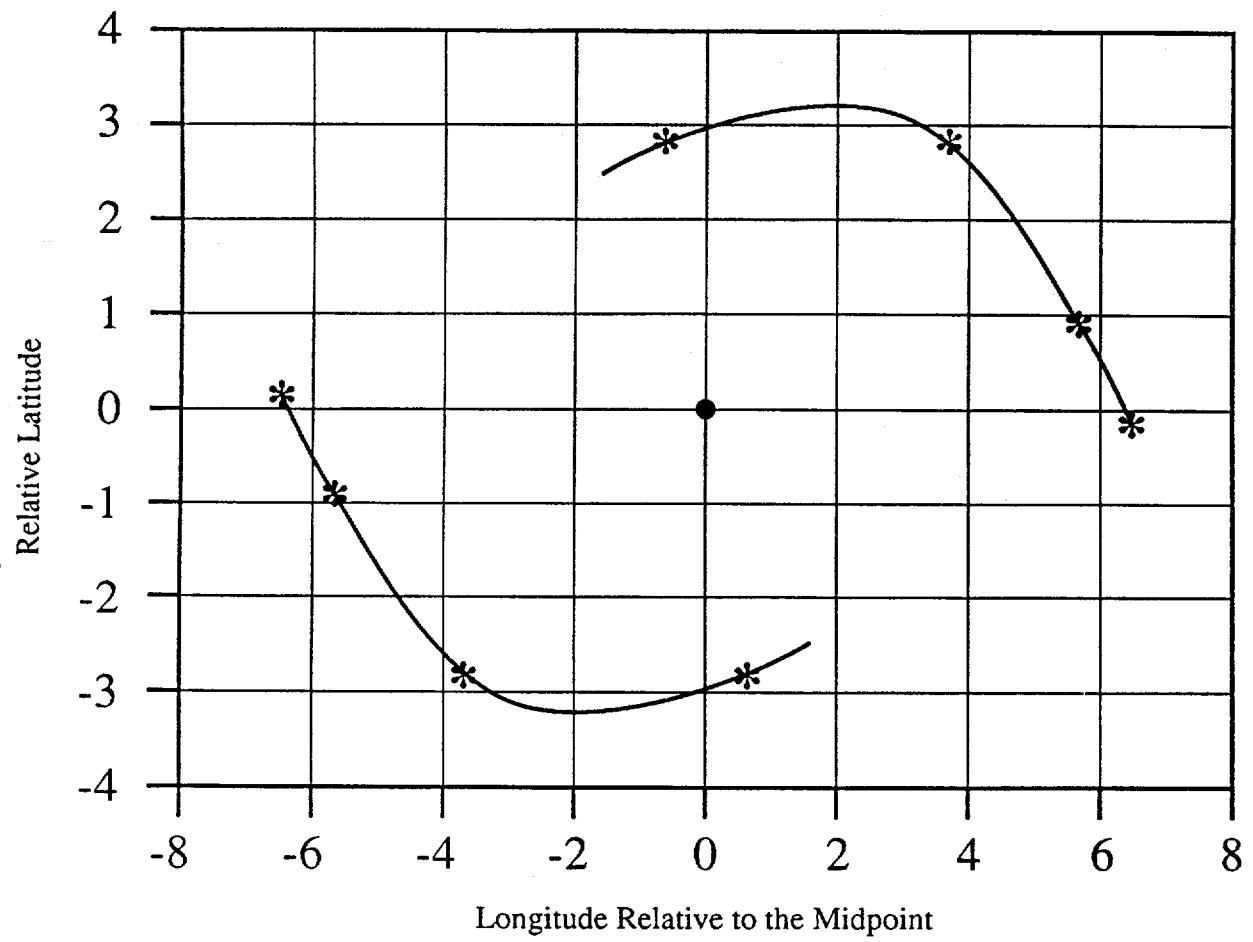


Figure 3-09-3 The binary interaction of Vanessa with Tim (08W) in a centroid-relative frame of reference.